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Follicular Carcinoma of Thyroid with Solitary Vertebral Metastasis

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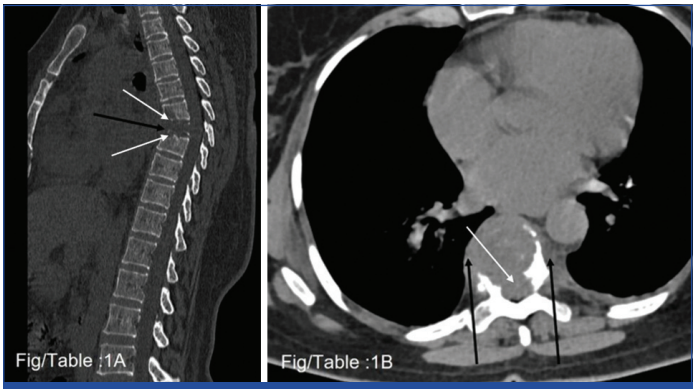
A 48-year-old female presented with a one-month history of back pain radiating to both lower limbs, which had worsened over the past three days. The pain had an insidious onset and was gradually progressive, radiating from the upper back to the plantar aspect of the feet. She also reported gait instability for three days, rest pain and sleep disturbances. There was no history of recent trauma, fever, significant weight loss, chronic cough, or night sweats. The patient had a history of thyroidectomy for follicular carcinoma of the thyroid seven years back. The family history was unremarkable.

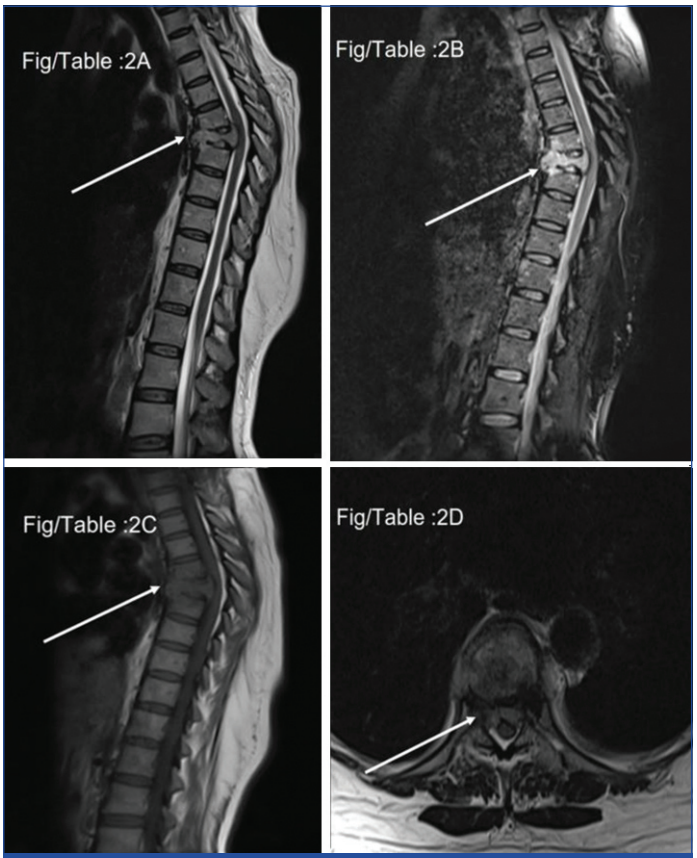
On examination, the patient was conscious, oriented and afebrile. Vital signs were normal. Cardiovascular and respiratory system examinations were unremarkable. Abdominal examination revealed a soft abdomen with normal bowel sounds. Neurological examination showed a positive Straight Leg Raise (SLR) in both lower limbs at 30 degrees. Motor function on the day of admission was rated as 4/5 in bilateral lower limbs. Sensation was impaired, with numbness in both lower limbs. On the second day of admission, the patient developed complete loss of motor function (0/5) in both lower limbs, as well as complete loss of sensation and bowel and bladder incontinence.

Laboratory investigations revealed a haemoglobin value of 10.6 g/dL; total leucocyte count of 16,510/cu.mm (Neutrophils: 85.9%, Lymphocytes: 8.8%); and an Erythrocyte Sedimentation Rate (ESR) of 15 mm/hr. Thyroid, renal and liver function tests were within normal limits. The patient underwent a Computed Tomography (CT) scan of the dorsolumbar spine, neck, chest and abdomen. The CT scan of the dorsolumbar spine showed a lytic lesion with complete collapse of the D7 vertebral body, along with destruction of the adjacent endplates of the D6 and D8 vertebral bodies [Table/Fig-1a]. A mild associated soft-tissue component was noted in the bilateral paravertebral region and anterior to the dura at the D7 level [Table/Fig-1b]. CT scans of the neck showed postoperative changes at the level of the thyroid gland, with no significant lymphadenopathy. CT scans of the chest and abdomen showed no significant abnormalities apart from the D7 vertebral lesion. Magnetic Resonance Imaging (MRI) of the dorsolumbar spine revealed partial collapse of the D7 vertebral body with an associated soft-tissue component anterior to the dura, causing focal kyphotic deformity and cord compression, suggestive of a pathological vertebral fracture [Table/Fig-2a-d].

The patient underwent posterior decompression and long-segment stabilisation from D4 to D7 with tissue biopsy under general anaesthesia. The biopsy of the D7 vertebral lesion showed features suggestive of metastatic follicular carcinoma of the thyroid. TrueNat Tuberculosis-Polymerase Chain Reaction (TB-PCR) was not detected. Following surgery, the patient regained bowel and bladder control. She was referred for radiotherapy and is currently receiving it alongside physiotherapy. This case illustrates an unusual presentation of follicular carcinoma of the thyroid with a solitary vertebral metastasis leading to spinal cord compression and paraplegia.



[Table/Fig-1]: a) Sagittal CT section of dorsal spine bone window showing a lytic lesion in D7 vertebral body with complete collapse of the vertebral body (black arrow). Mild endplate destruction was noted, involving the adjacent D8 and D10 vertebral endplates (white arrows); b) Axial soft-tissue window of dorsal spine shows mildly associated soft-tissue component in the bilateral paravertebral region (black arrows) and anterior to the dura at D7 level (white arrow).



[Table/Fig-2]: a) Sagittal T2-weighted images of dorsal spine MRI show complete collapse of D7 vertebra (white arrow); b) Showing the vertebra appearing hyperintense on STIR images (white arrow); c) Hypointense on T1-weighted Image (white arrow); d) Axial T2-weighted image of dorsal spine MRI showing minimal soft-tissue component at D7 level anterior to dura (white arrow).

While bone metastases are recognised in differentiated thyroid cancer, a solitary vertebral metastasis as the initial manifestation

is rare [1]. Follicular thyroid carcinoma tends to metastasise haematogenously and when bone metastases occur, they can present with pain, pathological fractures and neurological deficits, as seen in the index case [2]. Similar cases have been documented in the literature, highlighting the atypical presentation of solitary spinal metastases in thyroid carcinoma [3-5]. Doe J et al., reported a case series where vertebral metastasis was the first indication of follicular thyroid carcinoma, underscoring the importance of thorough diagnostic evaluations in similar contexts [3]. Chen YK et al., described rare instances of thyroid cancer initially presenting as solitary bone metastases, further illustrating these unusual clinical scenarios [4]. Additionally, Kumar V et al., provided an analysis of uncommon metastatic patterns in differentiated thyroid cancer, emphasising the importance of recognising such patterns for timely treatment [6].

The diagnosis of metastatic thyroid carcinoma in the present case was established through a histopathological examination of the vertebral lesion. Kumar V et al., discussed similar patterns of solitary vertebral involvement in their analysis, supporting the diagnostic process followed in the present case [6]. The management of metastatic follicular thyroid carcinoma typically involves a combination of surgery, radioiodine therapy and external beam radiotherapy for the palliation of bone metastases [7]. In the present case, surgical decompression and stabilisation were performed to address the spinal cord compression, followed by recommendations for complete thyroidectomy and radiotherapy. Such approaches are supported by Njoum Y et al., who reviewed cases with isolated skeletal lesions, demonstrating successful outcomes with multidisciplinary treatment strategies [5].

The present case, along with similar reports, highlights the importance of considering metastatic thyroid carcinoma in the differential diagnosis of patients presenting with vertebral lesions and neurological deficits, even in the absence of obvious thyroid abnormalities. A high index of suspicion and thorough investigation are essential for prompt diagnosis and appropriate management.

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